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### Deposited in DRO:

17 June 2011

### Version of attached file:

Published Version

### Peer-review status of attached file:

Peer-reviewed

### Citation for published item:

Coningham, R. A. E. and Gunawardhana, P. and Manuel, M. J. and Adikari, G. and Katugampola, M. and Young, R. L. and Schmidt, A. and Krishnan, K. and Simpson, I. (2007) 'The state of theocracy : defining an early mediaeval hinterland in Sri Lanka.', *Antiquity*, 81 (313). 699-719 .

### Further information on publisher's website:

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# The state of theocracy: defining an early medieval hinterland in Sri Lanka

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*The ancient Sri Lankan city of Anuradhapura is currently the subject of one of the world's largest and most intensive archaeological research projects. Having traced its growth from an Iron Age village to a medieval city, the research team now moves to the task of modelling the surrounding landscape. Three seasons of fieldwork have located numerous sites of which the most prominent in the urban period are monasteries. Here is a clue about how the early urban hinterland was managed which has implications well beyond Sri Lanka.*

**Keywords:** Anuradhapura, Sri Lanka, heterarchy, monasticism, survey, theocracy

## Introduction

The UNESCO World Heritage Site of Anuradhapura is one of Asia's major archaeological and pilgrimage centres. The Sri Lankan capital for 1500 years until AD 1017 (Coningham 1999: 15), its rulers constructed monasteries and lakes, and attracted merchants involved in Indian Ocean trade. Although excavations have traced its growth from an Iron Age village to a medieval city (Coningham 1999; 2006), we know almost nothing of the role played by communities in its surrounding plain. As a result, a team of archaeologists, geoarchaeologists and archaeological scientists from the Universities of Durham, Bradford, Kelaniya, Leicester and Stirling developed a project to model pre-urban and urban networks within the plain and to assess the impact of urbanisation on non-urban communities. Funded by the Arts and Humanities Research Council, we completed our third field season in the summer of 2006 and identified three main categories of sites: shallow ceramic scatters, shallow metal-working sites and deeply stratified monastic sites. We have been able to attribute occupation dates to some of these sites on the basis of diagnostic pottery, architectural styles and other features and artefacts.

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Received: 27 November 2006; Accepted: 18 January 2007; Revised: 30 March 2007

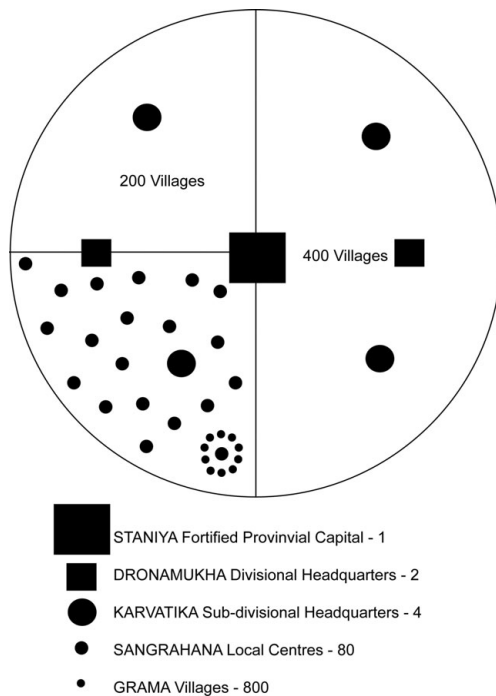


Figure 1. Schematic model of the postulated settlement patterns expressed within the *Arthashastra*.

## Textual evidence for the Mauryan state

The emergence of South Asia's first centralised empire in the second half of the first millennium BC (320-180 BC) is well recorded in textual and archaeological sources (Erdosy 1988; Allchin 1995; Kenoyer 1997), although alternative interpretations suggest that there is room for debate concerning the nature and extent of the centralisation of power (Fussman 1988; Sugandhi 2003). The *Arthashastra* or 'treatise of wealth' is a description of a South Asian state attributed to Kautilya, the chief minister of the first Mauryan emperor, Chandragupta Maurya (Rangarajan 1992). Although believed to have been altered in the following centuries, most scholars would agree that it serves as a very useful insight into the administrative framework of the Early Historic world in South Asia (Trautmann 1971). However the

*Arthashastra* may have been written as an ideal or exemplar for many areas of political and social action rather than a record of the actual state of affairs (Sinopoli & Morrison 1995; 206-7). Sugandhi (2003) has explored Asokan edicts as a source of wider information about the nature and extent of the Mauryan Empire, and Fussman (1988) argues that rather than a strongly centralised empire, the Mauryan is in fact a series of de-centralised units, based on local and provincial offices and officers. As the aim of this paper is to explore the nature of settlement in the Anuradhapura hinterland, rather than to offer a summary of position with regard to the understanding of political form of the Mauryan empire, we will here focus on the use of the *Arthashastra* and the results of Erdosy's archaeological survey in northern India in order to construct a useful model of urban development to test with our own data.

In the *Arthashastra*, Kautiliya advises the king to settle the people of his kingdom in a strict hierarchy on a base formed by 800 villages of between 100 and 500 families of agriculturalists (*Arthashastra* IV.i). Every group of ten villages or *gramas* was to be served by a sub-district headquarters, or *Sangrahana*. Every group of 20 *Sangrahana* were then served by a district headquarters, or *Karvatika*, and every two *Karvatika* were served by a divisional headquarters or *Dronamukha*. Finally, the provincial headquarters, the *Sthaniya*, should be established at the well-ordered centre of the kingdom (Figure 1; Table 1).

Formal archaeological evidence of this settlement hierarchy was identified by George Erdosy during his survey of the Early Historic kingdom of Vatsa in northern India (1988). Erdosy recorded five tiers including the political capital (Kausambi) at over 50ha; secondary

**Table 1. The hypothetical settlement pattern of a territory according to the Arthashastra.**

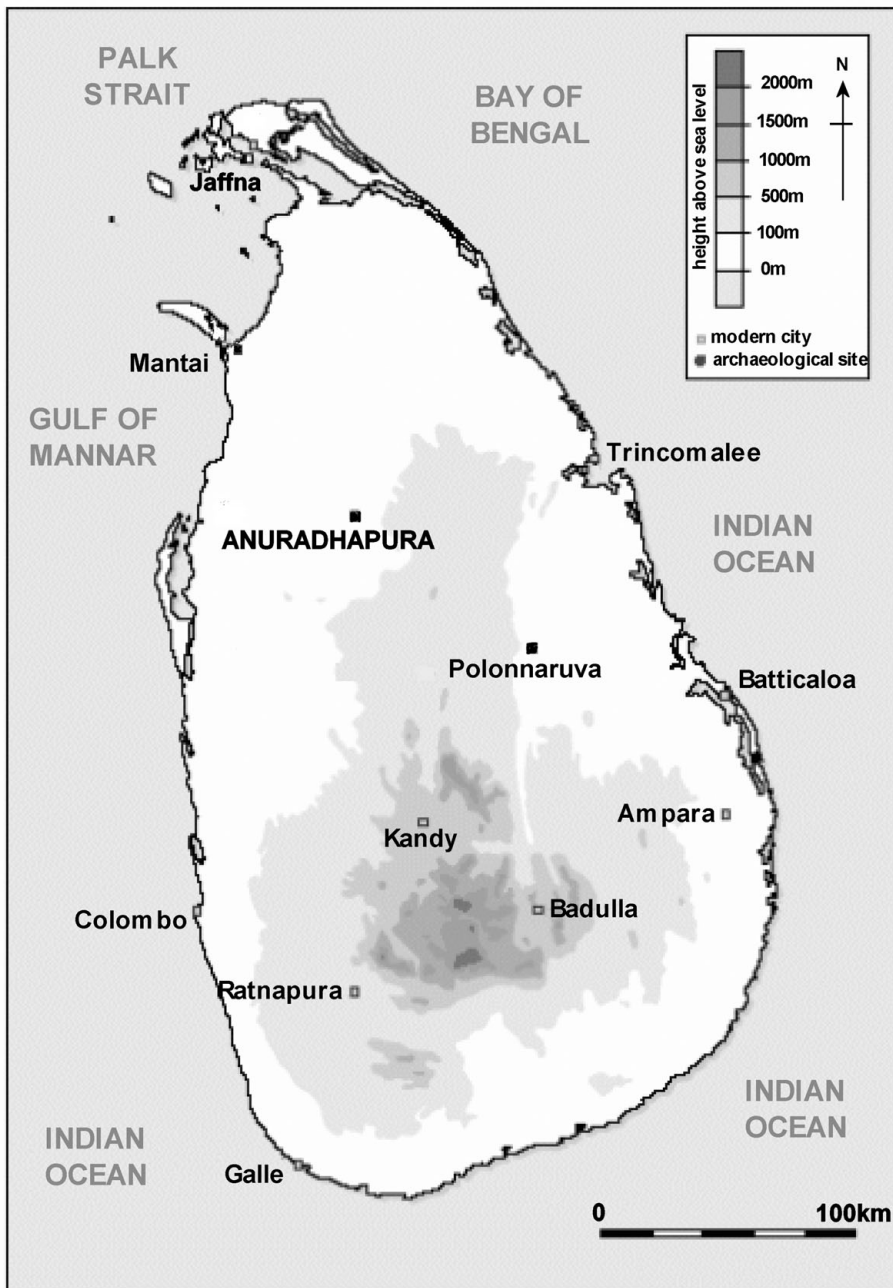
Name	Function	Number
<i>Sthaniya</i>	Provincial headquarters	1
<i>Dronamukha</i>	Divisional headquarters	2
<i>Karvatika</i>	District headquarters	4
<i>Sangrahana</i>	Sub-district headquarters	80
<i>Grama</i>	Village	800

centres or towns with administrative and processing functions at between 10 and 50ha; minor manufacturing centres at between 6 and 10ha; primary administrative settlements at between 3 and 6ha, and villages below 3ha (Erdosy 1995: 107-8). Moreover, Erdosy suggested that these categories of settlement were also to be found within a number of the other contemporary kingdoms of north India and that they represent '*integrated networks of settlements graded by size and the range of their functions*' (*ibid.*: 109). Although there are limitations to Erdosy's survey methodology, his general findings appear to have been accepted by subsequent scholars who support the concept of a centralised Early Historic state (Allchin 1995: 198).

## The state of Sri Lanka

This concept has also been applied across the Palk Straits to the island of Sri Lanka, where the historian K.M. De Silva declared that the island's irrigation works in the tenth century AD provided '*positive evidence of a prosperous economy and a well-organised state which had so great an agricultural surplus to invest in these projects as well as on religious and public buildings designed on a lavish scale.*' (De Silva 1981: 31-2). The origins of this well-organised state are also apparent within the corpus of early inscriptions dating to between the third century BC and the first century AD, which refer to the presence of numerous categories of officials within the kingdom. Recording donations to the *Sangha* or Buddhist order, donors include individuals holding titles of *senapati* or army commander, *bhandagarika* or treasurer, *amatya* or courtier, *mahamatra* or administrator, *adaka* or superintendent, *parumaka* or chief, *kulina* or gentry, *gamika* or village headman or councillor as well as *gapati* or head of a household (Paranavitana 1970).

Paranavitana himself drew comparisons between these titles and those in the *Arthashastra* (1970: xciv) and other scholars have used the island's Buddhist Pali literature to extrapolate as to the subdivisions of the ancient Sri Lankan state. For example, De Silva suggests that the state was divided into provinces or divisions (De Silva 1981: 21) and further divisions were made of provinces into districts or *ratas*, the latter being subdivided into groups of ten villages (Rahula 1956: 237). The presence of a tax regime supporting state administration is also evident from the presence of *ayakas* or revenue officers in inscriptions and individuals with the right to tax ferries (Paranavitana 1970: xcix) as well as the presentation of such duties from the king or royalty to the *Sangha* as recorded in the Godavaya port inscription of King Gajabahu Gamani Abhaya (r. AD 174-196) (Paranavitana 1983: 101).



*Figure 2. Map showing the location of major sites and cities in Sri Lanka.*

### **The city of Anuradhapura**

Anuradhapura – the heart of the Sri Lankan polity – has become one of the most intensively studied and excavated Early Historic cities in South Asia (Figure 2). Early archaeologists

focused upon identifying the course of the brick and clay fortifications surrounding the 100ha city (Parker 1909) but soon attention turned to exposing stone pillared structures close to its surface (Hocart 1924; Paranavitana 1936). The antiquity of the walled city, the Citadel, was only later investigated by Dr Siran Deraniyagala in the 1960s, whose sondage revealed a 10m deep cultural sequence (1972; 1986). In the 1980s Deraniyagala implemented a systematic programme of test-pitting in order to study the city's growth (1992), but needing more reliable structural and artefactual sequences, invited a British team to excavate a larger 100m<sup>2</sup> trench (ASW2) close to the centre of the Citadel. During the five seasons of fieldwork, ASW2 yielded an extremely well-preserved sequence of 30 structural phases tracing the development of the site from a small Iron Age village with circular timber structures to the square stone pillared halls with glazed roof tiles of a medieval city (Coningham 1999; 2006). Moreover, its extremely rich artefactual sequence has allowed us to trace the development of Indian Ocean trade networks from pre-Roman regional origins, through Indo-Roman contact and into the medieval period until the city was abandoned in AD1017 (Coningham 2002).

Beyond the walls of Anuradhapura's secular core lies a further 25km<sup>2</sup> of Buddhist monastic establishments focused on four great brick-built stupas. Reflecting over 1000 years of patronage and pilgrimage, this Sacred City developed from the third century BC onwards with the establishment of the *Mahavihara* or great monastery by King Devanampiya Tissa (Bandaranayake 1974; Coningham 1999). Its earlier monuments are now dwarfed by its stupas, the 106.5m high Ruvanvelisaya stupa and the 58.5m high Mirisavati stupa, both built in the second century BC. A centre of Buddhist orthodoxy, later kings challenged the *Mahavihara's* authority by establishing the nearby *Abhayagiri* in the first century BC and *Jetavanarama* monastery in the third century AD, the latter centred on a stupa of 160m (Figure 3) and the former on a massive stupa 71.5m high. With such an accumulation of wealth, monuments and relics, pilgrims from throughout the Buddhist world visited Anuradhapura and their diaries record the presence of 5000 monks in the *Abhayagiri* monastery with a further 3000 in the *Mahavihara*. Communal efforts, Anuradhapura's monuments demonstrate the surplus labour and resources available to its rulers and remain physical markers of authority and devotion.

The outer reaches of the city are defined by the presence of three artificial lakes, the Basawak Kulam, the Tissa Wewa and the Nuwara Wewa covering areas of 91, 160 and 1288ha respectively. With dates ranging from the fourth century BC for the Basavak Kulam to the first century AD for the Nuwara Wewa, they were augmented in the fifth century AD with feeder channels and canals (Brohier 1934). This hydraulic system allowed excess wet season water to be stored for drinking and irrigation agriculture as well as enabling the diverting of water from other river catchments to large storage tanks, such as the Nachchaduwa, before being released into Anuradhapura's system.

## Mapping the hinterland of Anuradhapura

In contrast with over 100 years of archaeological and antiquarian interest in the sacred and secular cities of Anuradhapura, almost nothing is known of the nature of non-urban communities within the hinterland of Anuradhapura and, as a result, the second phase



*Figure 3. The 160m high brick stupa of Jetavana, one of Anuradhapura's largest monuments.*

Anuradhapura (Sri Lanka) Project was launched with the five-year aim of modelling the networks between urban and non-urban communities and the environment within the plain of Anuradhapura over the course of two millennia. Specifically, the project aims to define and interpret the following objectives: the spatial location and sequence of urban and non-urban communities; the morphology and function of urban and non-urban communities; the subsistence base of urban and non-urban communities; the soil and sedimentary sequence within the plain as a foundation for understanding resource patterns and enhancement within the plain. In line with these objectives, a methodology was developed to map the nature and location of non-urban sites, soils and resources, with a sample of sites later subjected to geophysical survey and excavation.

Our sample universe extends for a 50km radius from trench ASW2 in the citadel of Anuradhapura (Coningham 1999) (Figure 4). Within this universe we have two parallel methodologies, a randomly generated series of transects, and non-probabilistic survey along the Malwatu Oya or river. The first method is a sample of 24 transects of 20km randomly generated within the survey zone. Each transect is covered by two groups of archaeologists walking parallel 500m apart, who record topography, vegetation, land use, resources and cultural features (Figure 5). Sites are defined as a cultural feature, a lithic find spot or a scatter of more than five ceramic sherds per square metre. Sites were recorded with GPS, photographed and sketched, with diagnostic material, such as debitage, slag and wasters



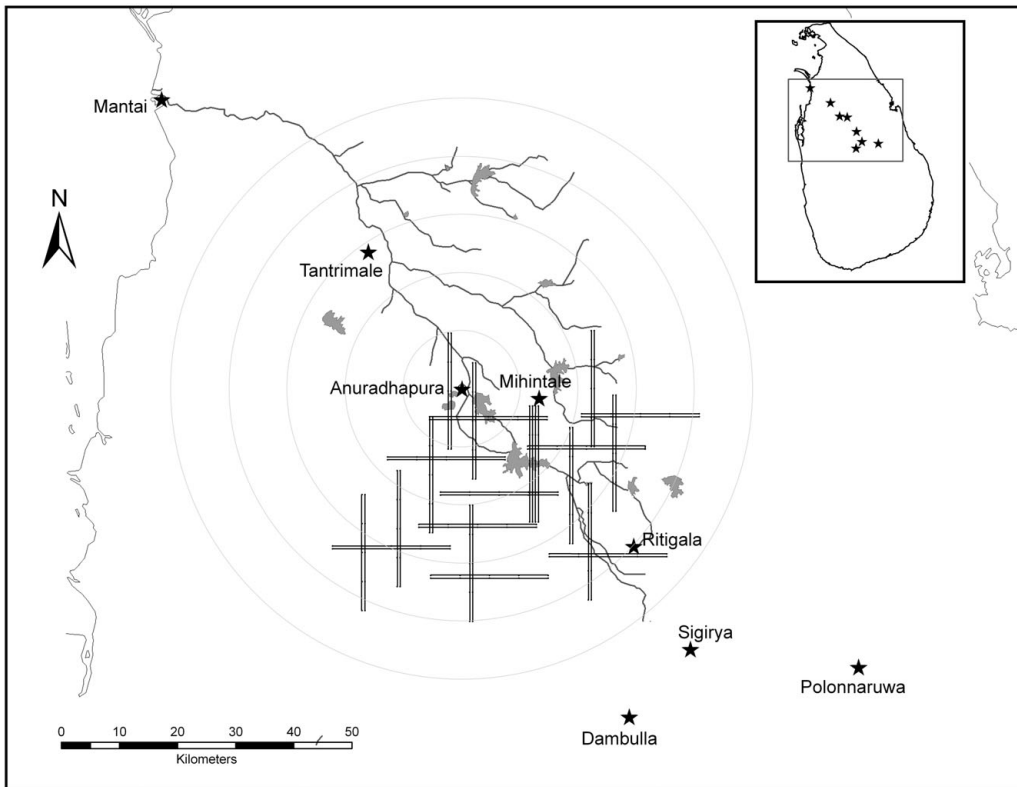


Figure 4. Map of our sample universe showing key sites, transects and the Malwatu Oya river system. The concentric circles are at 10km intervals from trench ASW2 in the citadel of Anuradhapura.

collected for processing at Anuradhapura. Our second survey strategy involved a non-random survey of the banks of the Malwatu Oya, in order to identify the possibility that settlements were located along the main arterial route from the city to the coast. The port of Mantai, located close to the mouth of the Malwatu Oya, to the north-west of Anuradhapura appears to be the main trading conduit for the huge volume of exotic and imported material found within the city (Coningham 2006).

### Categorising settlement within the hinterland

During three seasons of survey, the teams have recorded a total of 1082 sites, of which 694 are archaeological, 153 are ethnoarchaeological, and 235 are landscape features. The modern ethnoarchaeological sites can be divided into 108 brick-making sites, 15 quarries, four pottery manufacturers, three blacksmiths and two hunting/fishing locations. All 235 landscape features are tanks (artificial reservoirs), constructed to support agriculture and villages in the hinterland. For ease of discussion, and to allow comparison with other regional Sri Lankan surveys, such as Manatunga (1990), our archaeological sites have been divided into 398 ceramic scatters, 68 monastic sites, 61 sites with slag, 17 sites with conical holes, 11 possible megalithic tombs, five sites with terracotta figurines, five stone bridges,





Figure 5. A survey team walking one of the transects.

Table 2. Breakdown of archaeological sites recorded during the first three seasons of the Anuradhapura (Sri Lanka) Project.

Type of Site	Number of Sites
ARCHAEOLOGICAL	694
<i>Ceramic scatters</i>	398
<i>Monastic sites</i>	68
<i>Undiagnostic sites with stone pillars, blocks and walls</i>	73
<i>Sites with slag</i>	61
<i>Possible megalithic tombs</i>	11
<i>Stone bridges</i>	5
<i>Annicuts, sluices and irrigation channels</i>	56
<i>Other sites</i>	22

56 annicuts, sluices and irrigation channels, and 73 undiagnostic sites containing stone blocks, pillars and walls (Table 2).

#### *Ceramic scatters*

In all three seasons, ceramic scatters were the most frequently recorded sites and were defined as those sites at which ceramics were the most prominent feature and were not associated with structures. Ranging in size from one to 60 000m<sup>2</sup>, they vary in density from five to

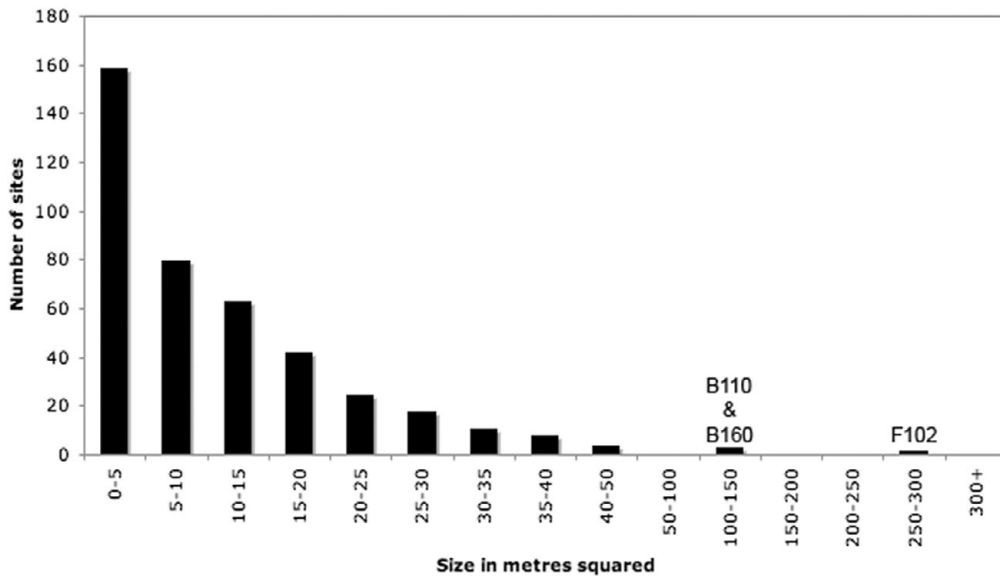


Figure 6. Graph showing the number and size of ceramic scatters within our sample universe.

over 20 sherds per square metre and are notable for the absence of fine wares, semi-precious stone, glass and bone (Figure 6). Ceramic scatters are evenly distributed within the survey area, although there do appear to be several clusters present – along the river north of the citadel, to the south of Nachchaduwa Wewa, and roughly 25km south of the citadel (Figure 7). However, these areas are also where two transects cross over each other. Our working hypothesis is that these small ceramic scatters, typically found on well-drained reddish brown earth soils, represent peripatetic villages engaged in *chena* (slash-and-burn) agriculture. *Chena* agriculture is still common in the areas around Anuradhapura, especially in the areas where irrigated rice cultivation is impractical. Auger coring of a sample of scatters indicated an occupation depth of between 0.2 and 0.3m, now confirmed by the excavation of scatter site Siyabalagaswewa (B009). The latter's shallow postholes also suggested a temporary occupation and the only finds were coarse ceramic sherds.

The vast majority of our 398 ceramic scatters cover an area of less than 25m<sup>2</sup> but there are three notable exceptions. Sites B110 and B160 both extend over an area of 100 × 100m but their ceramic densities are low and intermittent. However, our largest ceramic scatter – Rajaligama (F102), extended over an area of 200 × 300m. Significantly larger and denser than other scatters, we have tentatively suggested that the site may represent our only example of a town within the hinterland. The exceptional nature of this scatter site is reinforced by the presence of glass, bone and fine wares (Rouletted Ware and Arikamedu Type 10) linking the site to Period G (c. 200 BC to AD 130) of trench ASW2 in Anuradhapura's citadel (Coningham 2006). Excavation and auger cores at the site suggest that the ceramic scatters do not penetrate more than 0.2-0.3m anywhere across the site – indicating that, like the smaller scatters, Rajaligama was not an enduring settlement.

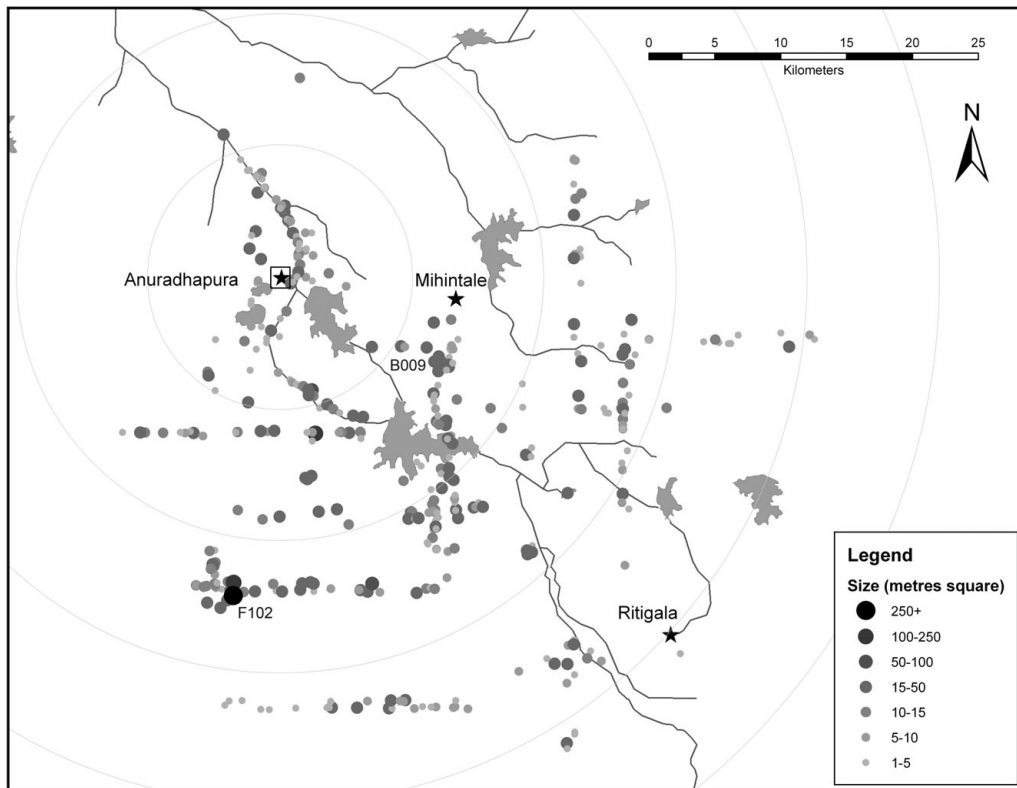


Figure 7. Map showing the distribution of ceramic scatters within our sample universe.

### *Monastic sites*

The designation of ‘monastic’ refers to 68 sites associated with Buddhist sculptures, stone and brick monuments and inscriptions (Figure 8). The 68 monastic sites can be further divided into 30 rock shelters or *lena* (six of which contained inscriptions dating to between the third century BC and the first century AD), 18 monastic complexes located on granite outcrops, 13 complexes located on the plain, six double platform complexes and one *Pabbata Vihara*. One of these outcrop complexes, Thalaguru, consisted of a large stupa 15m high and 30m in diameter. From its summit it is possible to view all the major stupas of Anuradhapura and Mihintale. Five of the six double platform sites were previously known, and are located within Anuradhapura’s monastic suburb. However, an unknown double platform site was located on survey 19.8km south-west of the citadel at Marathamadara (site C112) (Figure 9). Located south of Nachchaduwa Wewa, Marathamadara comprises a large rock-cut cistern and a number of double-platforms with associated bridges and rock-cut moats/cisterns around them. It belongs to a well-known category of site – the *Padhanaghara Parivena* – that can also be found within the Western Monasteries of Anuradhapura to the north and at Ritigala to the south. Frequently attributed to the *Pamsukulika* sect of meditational monks, their signature monasteries are generally dated to

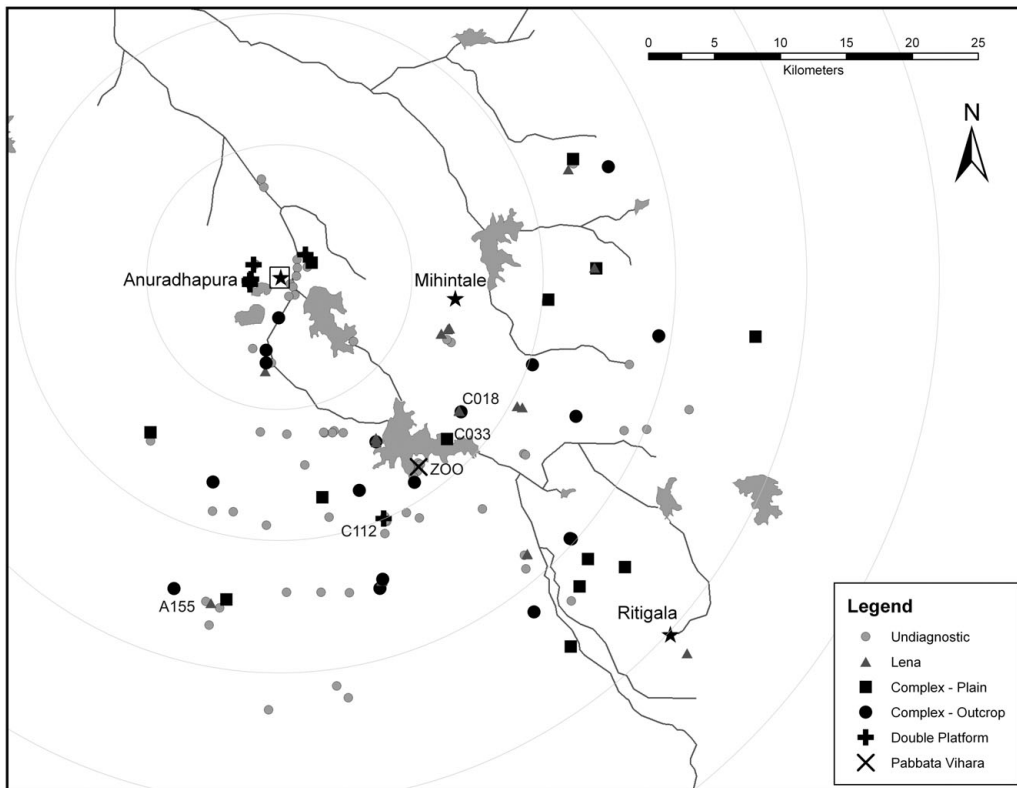


Figure 8. Map showing the distribution of monastic sites within our sample universe.

between the eighth and tenth centuries AD (Bandaranayake 1974: 130; Wijesuriya 1998: 148).

The largest monastic complex identified in the survey is the site of Parthigala (Z00), situated on the southern fringe of Nachchaduwa Wewa. Defined by a stone and brick perimeter wall measuring some 480m east to west and 440m north to south, Parthigala is only accessible by dugout canoe during the wet season. The complex includes a central group of monuments including stone pillared halls, image house and a 6.5m high stupa. Architecturally, we have interpreted this complex as a *Pabbata Vihara* or Royal Monastery (Bandaranayake 1974; Wijesuriya 1998) dating to between the mid-eighth and twelfth centuries AD (Bandaranayake 1974: 81). Our excavations at Parthigala indicated a shallow occupation and artefacts included iron objects, a worn coin, slag, a furnace bottom and a fragment of quartz debitage.

A greater depth of occupation has been recovered from two other monastic sites. For example, Sembukulama (C033) provided a deep structural sequence of 1m with evidence of stone, brick and tile structures and finds of slag, iron objects and sherds of fine ware and Black and Red ware. Black and Red ware may be dated to between the beginning of the first millennium BC and c. 200 BC and the fine ware to between c. 200 BC to 130 cal AD,





*Figure 9. View of the double platform site at Marathamadara (C112).*

confirming the longevity of the site. Finally, the monastic outcrop site of Vehragala (A155) (Figure 10) provided a 3m deep sequence of brick, stone and tile construction complete with finds of glass, bone, Black and Red ware and fine ware (Figure 11).

#### *Sites with stone pillars, blocks and walls*

A total of 73 sites comprising of worked stone in the form of pillars and blocks have so far been identified. These sites have the potential to be monastic centres, but are generally badly damaged, robbed or suffer from bioturbation. Due to their undiagnostic nature they have not been included within the monastic sites category but such a function is likely and will be tested by excavation in the final season.

#### *Metalworking sites*

Of the 61 sites where slag has been identified, 46 were found with an accompanying ceramic scatter, three sites were associated with one of the undiagnostic sites with stone pillars and blocks, and a further six were associated with identified monastic sites. Initial analysis of the slag has suggested that three of the sites were engaged in smelting, with the remaining slag the result of smithing. The three smelting sites were all located close to each other south of Nachchaduwa Wewa, and one of the sites was associated with a monastic complex. Coring



Figure 10. View of Vehnagala (A155), a monastic site located on top of a granite outcrop.

at a sample of these sites suggests that occupation was limited as they are all shallow but again this assumption will be tested by excavation in the final season.

### Vegetation and visibility

As part of the project methodology, we are also concerned with recording the impact of archaeological visibility upon our detection of sites and so the survey teams recorded soil and vegetation types. This allows us to map the modern distribution of vegetation and soils within the plain, feeding into our geoarchaeological and ethnoarchaeological work, as well as ascertaining whether vegetation is influencing the identification of sites. After three field seasons and 16 completed transects, we have now walked over 700km. Some sections of transect have been omitted due to access restrictions, and Table 3 shows a breakdown of the soils and vegetation traversed, along with the number of sites found within each zone.

It is important to note that the sum of the percentages does not always equal 100 per cent because in areas such as tank, paddy and dense *chena*, it is often difficult to ascertain soil type. Likewise, the 'sites per km' data do not include the vegetation distance data for Transect 8, undertaken in the pilot season or on the non-probabilistic river survey. The 'distance traversed' data also presents problems in that we are forced to record linear distances for what is essentially area data. The data reflects the division of the completed transects into the vegetation types outlined above.





Figure 11. Trench at Vehragala (A155) demonstrating a deep sequence of deposits.

Table 3. Vegetation and visibility data for the first three seasons of the Anuradhapura (Sri Lanka) Project.

Vegetation Type	Distance traversed (km)	% of total distance	Number of sites	Sites per km
<i>Granite Outcrop</i>	39.55	5.8	53	1.34
<i>Granite Boulders</i>	32.60	4.8	23	0.71
<i>Village/Garden</i>	121.00	17.8	160	1.32
<i>Ploughed Field</i>	13.54	2.0	12	0.89
<i>Tank</i>	86.28	12.7	143	1.66
<i>Paddy</i>	138.8	20.4	60	0.43
<i>Parkland</i>	19.27	2.8	18	0.93
<i>Chena</i>	63.26	9.3	38	0.60
<i>Elephant Grass</i>	21.38	3.1	14	0.65
<i>Overgrown Chena</i>	94.00	13.8	42	0.45
<i>Forest/Jungle</i>	70.93	10.4	28	0.39

Table 3 suggests that vegetation can have an effect on the ability to identify sites and, excluding the data from tanks (as every tank is counted as a site), we have located the greatest number of sites within villages, gardens, parkland and ploughed fields. The low height of vegetation permits greater visibility of ceramics on the ground surface and allows



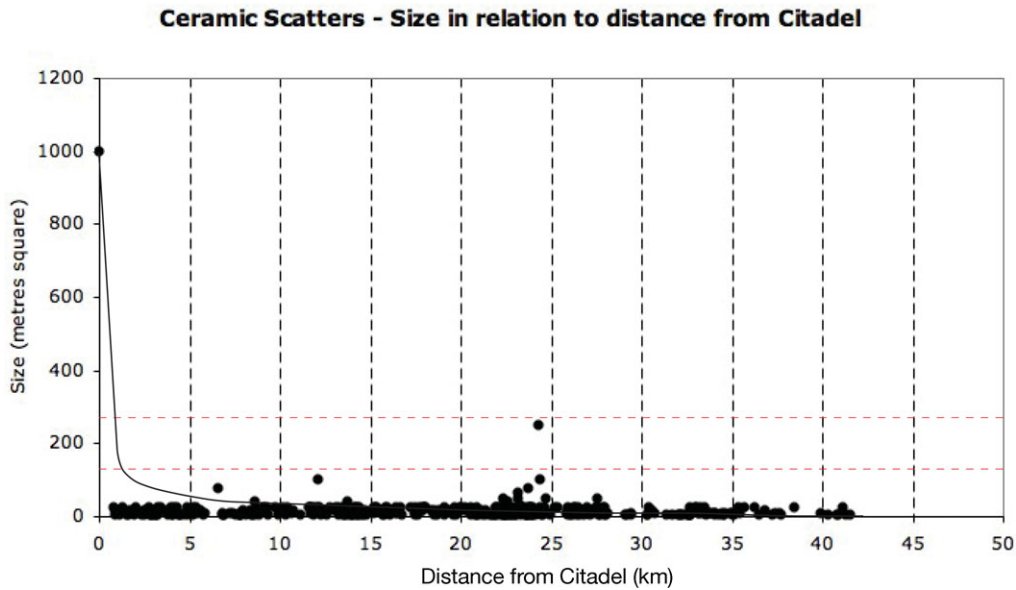


Figure 12. Size distribution of ceramic scatters from the first three seasons of survey.

the survey teams to spread into a line 10m apart. This data is also skewed as villages and gardens also account for the majority of modern ethnoarchaeological sites. Within dense *chena*, forests and elephant grass, the height and the enclosed nature of the vegetation restrict both ground visibility and room to form a line, whilst paddy fields, whilst less dense, can only be traversed along the dry bunds with 90 per cent of the ground surface underwater. Aside from tanks, granite outcrops provide the highest sites per kilometre ratio (1.34) due to a lack of vegetation, ensuring good visibility, as well as the fact that a high number of outcrops appear to have been utilised as monastic centres.

## Hinterland, hierarchy and heterarchy

On the basis of our first three seasons of fieldwork, we are now in a position to make a number of working hypotheses as to the nature of non-urban settlement within the hinterland of Anuradhapura. Firstly, ceramic scatters are the most numerous category of site and it is assumed that they represent small farming and/or pastoral communities practicing *chena* cultivation. Excavation indicates that they are not associated with luxury goods, such as glass and fine wares or with monumental materials such as brick, stone or tile and there was little evidence of manufacturing as there have been no finds of slag or stone debitage. Their small area and shallow occupation suggest that they were occupied for a short time, but again this will be tested by the results of construction of more accurate chronologies based on fresh radiocarbon dates from the excavations as well as from comparisons with material from trench ASW2 at Anuradhapura. Monastic sites are the second most numerous category and range from individual rock shelters with Early Brahmi inscriptions to monumental constructions, such as at Parthigala. Excavations at a number of sites, such as at Galkulama and Vehragala, indicate deep occupation and finds include glass, coins, bone and fine

wares as well as brick, stone or tile. The three excavated monasteries have also provided evidence of metalworking and lapidary activity. Metalworking sites are also numerous, as are concentrations of stone pillars, although as the latter are usually associated with roof tiles, they are also probably monastic in nature.

Clearly, these categories of sites do not correspond with the contemporary settlement hierarchy advocated in the *Arthashastra* or identified by George Erdosy in northern India. Indeed, it is very difficult to map our categories onto the state hierarchy of king, army commanders, treasurers, courtiers, administrators, superintendents, chiefs, gentry, village headmen and heads of household as contained within Sri Lanka's early and later Brahmi inscriptions (Paranavitana 1970). Although the concept of settlement or site hierarchy has received criticism in recent years (Cosgrove 1984; see also Fleming 2006), it remains a valuable tool for understanding an archaeological landscape (Wilkinson 2000; 2003; Drennan & Paterson 2004). However, it is important to recognise that settlement hierarchies can be established on a number of criteria – decision-making (political), economic and religious being the most commonly evoked. However, they generally tend to follow the maxim that the bigger the site the more important it was and whilst this may be true in some respects – greater size may indicate a greater population and therefore increased economic or political power – it does not take into full consideration the complexities of social, political and economic frameworks. Within any historic landscape, religious centres such as monasteries and temples, although smaller in size, may wield greater political and/or economic power than spatially larger villages or towns.

Evidence for such a suggestion may be illustrated in Figures 12 and 13, which present two very different postulated distributions of rural settlement and monastic institutions within Anuradhapura's hinterland. Plotted against distance from the Citadel of Anuradhapura, Figure 12 shows the distribution of ceramic scatter size within the 50km of our sample universe. The distribution of ceramic scatters size clearly marks Anuradhapura as a primate city, with the notable exception of F102, located at a distance of 24.3 km from the centre. Figure 13, however, presents the heights of brick and stone stupas within our survey area against distance from the Citadel of Anuradhapura. It is acknowledged that this figure is not a comparison of the monastic site area, but it is argued that stupa height may be directly related to the ability to mobilise an investment in both labour and material (Coningham 1995). In comparison with the primate pattern for ceramic scatters with the 100ha city of Anuradhapura at its centre, the plot of stupa heights demonstrates a far less uniform distribution, although stupas that are represented as 0m were too badly damaged to estimate original height. A second feature is that there appears to be a monastic 'shadow' between the Citadel of Anuradhapura and the monastic site of Mihintale, 13.2km from the centre, with only a single stupa being identified on survey in the intervening area. This 'shadow', perhaps indicating the direct influence or authority of Anuradhapura's monasteries, is not evident within the ceramic scatters – and therefore settlements – where there is an even distribution of sites throughout the hinterland.

In the light of this discussion, it should be stated that Erdosy's site hierarchy is based almost entirely upon the postulated size of the sites (1988), with little consideration given to the function or role that particular sites may have played within the society or landscape. Given that most South Asian Early Historic states are considered to be almost theocratic

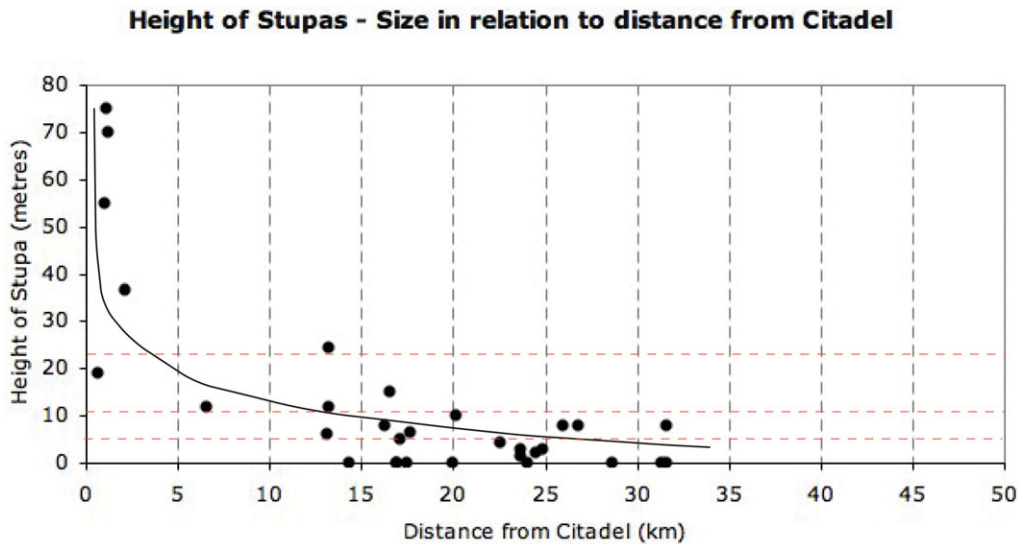


Figure 13. Height of stupas identified on survey and distance from the Citadel of Anuradhapura (stupas registered as 0m in height are too badly damaged to estimate original height).



Figure 14. Devotee taking offerings to Vehragala (A155).

in their political and economic structure (Kulke & Rothermund 1992), it seems surprising that religious centres, whether large or small, would not be incorporated into the site hierarchy. Indeed, Lansing's work in Bali has demonstrated that dispersed temple sites play pivotal roles in water management, agricultural production and dispute mediation within their immediate surroundings (Lansing 1987; Lansing & Kremer 1993). Across a wider landscape, these temples demonstrate their own religious hierarchy – whilst remaining self-regulating and divorced from royal or state allegiances. With reference to a Sri Lankan scenario, Leach has alluded to a similar lower-order management of water resources in the highlands of the island during the seventeenth century AD (Leach 1959). If we are to fully understand the hinterland of Anuradhapura, it is important to invoke

the concept of site hierarchies, but we must ensure that we do not assume that power is only represented by a single criterion but acknowledge that many hierarchies may exist simultaneously as indicated by Figures 12 and 13. A hetero-archival approach to the

hinterland will allow us to model the dichotomies that exist between the secular and religious elements within the landscape.

## **Comparative perspectives**

Whilst generating a unique urban pattern within South Asia, we have found many parallels outside the region. For example, the creation and maintenance of monumental irrigation and water sources by the Maya of Belize was directly linked to kingship and a centralised domination of the landscape. Drawing comparisons with the great stupas of Anuradhapura, Dunning *et al.* state that *'While the towering pyramids were visible beacons of Maya political order, the reservoirs . . . became integral parts of the urban design. The political authority of the rulers was manifest not only in the monuments dramatising the power of the king, but also in the creation of a source of precious water where formally there was none'* (1999: 657). Moreover, recent studies of urban centres in Mayan Belize suggest that they were designed to accommodate substantial numbers of people within their public plazas. Inomata (2006) has argued that public events and displays held within these plazas created and maintained the idea of community, and strengthened the links between elites and non-elites. In direct parallel, even today the monasteries of Anuradhapura remain a focal point in the religious life of people living within its hinterland. Religious festivals attended by tens of thousands of participants, such as the Jasmine Flower Festival, not only strengthen the urban-rural bond but also acts as a means to redistribute produce throughout the population.

Finding such parallels is not new as Coe suggested as early as 1957 that there were many similarities between the Mayan and Khmer landscapes within Central America and Southeast Asia respectively. Defining them as 'Tropical Forest Civilisations', Coe later developed this concept and argued that the wide uniformity of crops and difficulty of transport in the tropics prevented the emergence of true urban centres on the one hand, but that an agricultural surplus could support craft specialisation and non-agrarian elites on the other – thus at Angkor Wat (Cambodia), agricultural and labour surpluses from the hinterland were diverted to support and maintain temples in the cult centres (1961: 85). Again, this is a practice maintained in modern Anuradhapura, where the major monasteries of Anuradhapura, as well as smaller local temples are sustained through donations, offerings and free labour from surrounding villages (Figure 14). Bronson (1978) developed the work of Coe (1957; 1961) to incorporate Anuradhapura and Prambanan (Indonesia) within the same category as Angkor (Khmer) and Tikal (Maya); however, only further data collection and analysis will allow us to develop comparative models with the so-called Tropical Forest Civilisations (Coe 1961; Bronson 1978), as well as contemporary South Asian Early Historic models (Erdosy 1988; Kenoyer 1997) and later medieval examples (Fritz 1986; Fritz & Michell 1987; Sinopoli & Morrison 1995; Verghese 2004).

## **Conclusion**

In conclusion, our three seasons of survey and excavation within the hinterland of Anuradhapura indicate that the expected categories of towns and lower order administrative and manufacturing centres are missing from our region. We are therefore investigating

the possibility that the hinterland's numerous Buddhist monasteries performed the administrative, economic and political functions usually associated with towns, presenting a very different geo-political landscape from that in the north of the Subcontinent. Archaeological, epigraphical and architectural evidence suggests that these monasteries formed a network of long-lived centres of literacy, administration, education, production and the accumulation of economic surplus within the hinterland serving a mobile population but were still individually linked to the great *vihas* of the city of Anuradhapura. Such a model is easily applied to the monastic complexes on outcrops as they would have served as highly visible features for communities and because it is possible to view the stupas of Anuradhapura from their summits, something that is not usually possible within the dense vegetation of the plain. In the light of this observation, it is interesting to note that Shaw has argued that inter-visibility between Buddhist sites plays an important role, linking the main ritual locations into a unified whole (2000). When excavating the monastic outcrop site of Vehragala, we were able to observe similar functions at its modern vihara as labour, agricultural surplus, money, building materials, knowledge and religious merit were redistributed amongst its incumbents, villagers and visiting pilgrims. Such centres thus perform many of the roles traditionally expected of urban sites but, as argued by Knappet (1999), the imposition of ideological control over a hinterland was as important, if not more so, than economic or political control. Such a hypothesis would suggest that the hinterland of Anuradhapura was a theocratic landscape, where monastic centres played a dual role of religious and secular administrators.

Whilst such a theocratic landscape may have functioned for the majority of the period under analysis, it is possible to suggest that there may have been two separate attempts at imposing larger order centres in order to regulate the economy of the hinterland and meet the increasing demands of Anuradhapura's expansion. The first of these may be represented by the very large ceramic scatter of Rajaligama, which possesses many traits associated with the city, such as glass and fine ware ceramics, as well as evidence of metalworking and lapidary work. However, its extremely shallow deposit suggests that it was a short-lived Early Historic experiment. The second attempt at 'urbanising' may be represented by the construction of the monumental *Pabatta Vihara* or Royal Monastery at Parthigala. Of royal foundation, it was a monumental feature in the landscape and has evidence of metalworking and lapidary work. Constructed between the mid-eighth and twelfth centuries AD, its excavated deposits proved very shallow and it was abandoned by the end of the twelfth century AD.

## Future work

These models are, of course, current working hypotheses and much work still remains to be done before we can realise our stated aim and objectives. The longevity of many features and lack of stratigraphy on many of the sites comprising shallow ceramic scatters means that we are dependent upon forthcoming radiocarbon and OSL dates to build a detailed chronology of settlement activity in the plain throughout the lifespan of the city of Anuradhapura.

Our survey work will continue, completing the random transects and river survey. Additional sites have already been targeted for augering, geophysical survey and excavation and will allow us to develop our understanding of the inter-relationships that existed

within the hinterland. Ongoing geoarchaeological investigations are mapping the soils and resources of the plain, as well as projecting the development of the plain's famous irrigation systems and networks of tanks onto the database of archaeological sites allowing exploration of relationships between the control of water and monasteries. We are also expanding our ethnographic work to examine subsistence strategies and the function of monasteries. Finally, ICP-MS, GC-MS and thin-section analysis is also being undertaken to develop further the initial study of standardisation, function and provenance of ceramic manufacture (Ford *et al.* 2005) and to refine our chronologies. Lapidary and metallurgical analyses will allow us to further develop initial models for procurement, manufacture and distribution within the plain. Finally, we will continue to conduct our survey along the banks of the Malwatu Oya and feeder canals to investigate the hypothesis that permanent towns or centres, if they existed within the plain, may have functioned as break of bulk points along this major arterial route-way from the great port of Mantai to Anuradhapura.

## Acknowledgements

We are extremely grateful to the following individuals for their help, guidance and assistance Dr Senarath Dissanayake, Director-General of Archaeology; Dr Siran Deraniyagala, former Director-General of Archaeology; Professor M. Jayantha S. Wijeyaratne, Vice-Chancellor of the University of Kelaniya; Professor Y.M. Sunanda Madduma Bandara, Dean of the Faculty of Social Sciences, University of Kelaniya; Anura Manatunga, Department of Archaeology, University of Kelaniya. We should also like to express our thanks to the many staff and students of the Universities of Durham, Bradford, Kelaniya, Leicester, Rajarata and Stirling for their help in the field. We should also like to acknowledge Martin Carver, Roland Fletcher, Chris Scarre, Tony Wilkinson and three anonymous referees for providing extremely useful feedback on earlier drafts of this paper. The fieldwork and project is generously supported by the Arts and Humanities Research Council ([www.dur.ac.uk/arch/projects/anuradhapura/](http://www.dur.ac.uk/arch/projects/anuradhapura/)).

## References

- ALLCHIN, F.R. 1995. The Mauryan state and empire in F.R. Allchin (ed.) *The archaeology of Early Historic South Asia*: 187-221. Cambridge: Cambridge University Press.
- BANDARANYAKE, S.D. 1974. *Sinhalese Monastic Architecture: the Viharas of Anuradhapura*. Leiden: Brill.
- BROHIER, R.L. 1934. *Ancient irrigation works in Ceylon*. Colombo: Ceylon Government Press.
- BRONSON, B. 1978. Angkor, Anuradhapura, Prambanan and Tikal: Maya subsistence in an Asian perspective, in P.D. Harrison & B.L. Turner (ed.) *Pre-Hispanic Maya Agriculture*: 255-300. Albuquerque: New Mexico University Press.
- COE, M.D. 1957. Khmer settlement pattern: a possible analogy with that of the Maya. *American Antiquity* 22.4: 409-10.
- 1961. Social Typology and the Tropical Forest Civilisations. *Comparative Studies in Society and History* 4.1: 65-85.
- CONINGHAM, R.A.E. 1995. Monks, Caves and Kings: A Reassessment of the Nature of Early Buddhism in Sri Lanka (Ceylon). *World Archaeology* 27: 222-42.
- 1999. *Anuradhapura: the British-Sri Lankan Excavations at Anuradhapura Salgaha Watta 2, Volume 1 – the site* (British Archaeological Reports International Series 824/ Society for South Asian Studies Monograph 3). Oxford: Archaeopress.
- 2002. Beyond and Before the Imperial Frontiers: Early Historic Sri Lanka and the Origins of Indian Ocean Trade. *Man and Environment* 27: 99-108.
- 2006. *Anuradhapura: the British-Sri Lankan excavations at Anuradhapura Salagha Watta, 2 Volume 2 – the artefacts* (British Archaeological Reports International Series 1508/Society for South Asian Studies Monograph 4). Oxford: Archaeopress.
- COSGROVE, D. 1984. *Social Formation and Symbolic Landscape*. London: Croom Helm.
- DE SILVA, K.M. 1981. *A History of Sri Lanka*. Berkeley: University of California Press.
- DERANIYAGALA, S.U. 1972. The Citadel of Anuradhapura: excavations in the Gedige area. *Ancient Ceylon* 2: 48-169.

- 1986. Excavations in the Citadel of Anuradhapura: Gedige 1984 a preliminary report. *Ancient Ceylon* 6: 39–48.
- 1992. *The Prehistory of Sri Lanka*. Colombo: Archaeological Survey Department.
- DRENNAN, R.D. & C.E. PETERSON. 2004. Comparing archaeological settlement systems with rank-size graphs: a measure of shape and statistical confidence. *Journal of Archaeological Science* 31: 533–49.
- DUNNING, N., V. SCARBOROUGH, F. VALDEZ JR, S. LUZZADDER-BEACH, T. BEACH & J.G. JONES. 1999. Temple mountains, sacred lakes and fertile fields: ancient Maya landscapes in northwestern Belize. *Antiquity* 73: 650–60.
- ERDOSY, G. 1988. *Urbanisation in Early Historic India* (British Archaeological Report International Series 430). Oxford: Archaeopress.
- 1995. City states of north India and Pakistan at the time of the Buddha, in F.R. Allchin (ed.) *The Archaeology of Early Historic South Asia: the emergence of cities and states*: 75–98. Cambridge: Cambridge University Press.
- FLEMING, A. 2006. Post-processual landscape archaeology: a critique. *Cambridge Archaeological Journal* 16(3): 267–80.
- FORD, L.A., A.M. POLLARD, R.A.E. CONINGHAM & B. STERN. 2005. A geochemical investigation of Rouletted and other related South Asian fine wares. *Antiquity* 79: 909–20.
- FRITZ, J.M. 1986. Vijayanagara: authority and meaning of a South Indian imperial capital. *American Anthropologist* 88: 44–55.
- FRITZ, J.M. & G. MICHELL. 1987. Interpreting the plan of a medieval capital, Vijayanagara. *World Archaeology* 19.1: 105–29.
- FUSSMAN, G. 1988. Central and provincial administration in Ancient India: the problem of the Mauryan Empire. *Indian Historical Review* XIV: 43–72.
- HOCART, A.M. 1924. *Anuradhapura*. Colombo: Archaeological Survey Department.
- INOMATA, T. 2006. Plazas, performers and spectators. *Current Anthropology* 47.5: 805–42.
- KENOYER, J.M. 1997. Early city-states in South Asia: comparing the Harappan phase and Early Historic period, in D.L. Nichols & T.H. Charlton (ed.) *The Archaeology of City-States: cross-cultural approaches*: 51–70. Washington: Smithsonian Institution Press.
- KNAPPETT, C. 1999. Assessing a polity in protopalatial Crete: the Malia-Lasithi state. *American Journal of Archaeology* 103: 615–39.
- KULKE, H. & D. ROTHERMUND. 1992. *History of India*. London: Routledge.
- LANSING, J.S. 1987. Balinese “Water Temples” and the management of irrigation. *American Anthropologist* 89(2): 326–41.
- LANSING, J.S. & J.N. KREMER. 1993. Mergent properties of Balinese Water Temple networks: co-adaptation on a rugged fitness landscape. *American Anthropologist* 95(1): 97–114.
- LEACH, E.R. 1959. Hydraulic society in Ceylon. *Past and Present* 15: 2–26.
- MANATUNGA, A. 1990. The Kiri Oya valley, in S.D. Bandaranayake, M. Mogren & S. Eppiwatte (ed.) *The Settlement Archaeology of the Sigiriya-Dambulla Region*: 73–92. Colombo: Postgraduate Institute of Archaeology.
- PARANAVITANA, S. 1936. *Excavations in the Citadel of Anuradhapura*. Colombo: Archaeological Survey Department.
- 1970. *Inscriptions of Ceylon, Volume 1: early Brahmi inscriptions*. Colombo: Archaeological Survey of Ceylon.
- 1983. *Inscriptions of Ceylon, Volume 2: late Brahmi inscriptions*. Colombo: Archaeological Survey of Ceylon.
- PARKER, H. 1909. *Ancient Ceylon*. London: Luzac.
- RAHULA, W. 1956. *History of Buddhism in Ceylon: the Anuradhapura period*. Dehiwala: The Buddhist Cultural Centre.
- RANGARAJAN, L.N. (translated and edited). 1992. *Kautilya, The Arthashastra*. New Delhi: Penguin.
- SHAW, J. 2000. The sacred landscape, in M. Willis (ed.) *Buddhist Reliquaries from Ancient India*: 27–38. London: British Museum Press.
- SINOPOLI, C.M. & K.D. MORRISON. 1995. Dimensions of imperial control: the Vijayanagara Capital. *American Anthropologist* 97.1: 83–96.
- SUGANDHI, N. 2003. Context, content, and composition: questions of intended meaning and the Asokan edicts. *Asian Perspectives* 42.2: 224–46.
- TRAUTMANN, T.R. 1971. *Kautilya and the Arthashastra: a statistical investigation of the authorship and evolution of the text*. Leiden: Brill.
- VERGHESE, A. 2004. Deities, cults and kings at Vijayanagara. *World Archaeology* 36.3: 416–31.
- WILKINSON, T.J. 2000. Regional approaches to Mesopotamian archaeology: the contribution of archaeological surveys. *Journal of Archaeological Research* 8(3): 219–67.
- 2003. *Archaeological Landscapes of the Near East*. Tucson: University of Arizona Press.
- WIJESURIYA, G. 1998. *Buddhist Meditation Monasteries of Ancient Sri Lanka*. Colombo: Department of Archaeology.